

REMARKS

Claims 2 and 12-20 are pending in this application. By this Amendment, claims 2, 12 and 13 are amended to improve the claims' grammar and spelling. No new matter is added.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments:

(a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration as the amendments to claims 2, 12 and 13 are merely to correct formal matters (grammar and spelling); (c) do not present any additional claims; and (d) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

I. Request That Ijntema And Pacholok Be Made Of Record

Applicant notes that Ijntema and Pacholok are not currently of record. The references were not cited by Applicant and were not listed by the Examiner on a form PTO-892. The Examiner is requested to make Ijntema and Pacholok of record in this application by listing them on a form PTO-892.

II. The Claims Are Patentable Over The Applied References

The Office Action (1) rejects claims 2, 12 and 14-19 under 35 U.S.C. §103(a) over U.S. Patent No. 7,061,139 to Young et al. (Young) in view of U.S. Patent No. 4,775,827 to Ijntema et al. (Ijntema); (2) rejects claim 13 under 35 U.S.C. §103(a) over Young in view of Ijntema, and further in view of U.S. Patent No. 5,196,780 to Pacholok; and (3) rejects claim 20 under 35 U.S.C. §103(a) over Young, in view of Ijntema, and further in view of U.S. Patent No. 6,295,215 to Faria et al. (Faria). Applicant respectfully traverses the rejections.

Regarding independent claim 2, Young and Ijntema fail to disclose (1) "a control circuit for controlling an output voltage of the converter to be lower than a steady state voltage"; and (2) "a judgment circuit that judges the degradation of the storage battery based on a charging time of the storage battery from a time when the control circuit controls the

output voltage of the converter to return to the steady state voltage to a time when the battery is fully charged."

Young discloses, as prior art, an "on-line" or "double conversion" uninterruptible power supply (UPS) having a rectifier 120, an inverter 122, and a back-up battery 116 (Fig. 1).

The Office Action acknowledges that Young fails to disclose (1) the claimed control circuit; and (2) the claimed judgment circuit. The Office Action cites to Ijntema as curing the deficiencies of Young.

Ijntema discloses an indicator for the charge status of a battery, including control means 8, a voltage detector 7, and time measuring means 12 (Fig. 1). The charge status of a battery 4 is detected by measuring the elapsed discharge time and/or elapsed charging time (col. 2, lines 31-33). The voltage detector 7 detects, during discharge of the battery, when the battery 4 has a voltage equal to, for example, 10% of the nominal battery capacity (col. 5, lines 26-29). However, none of the measured times or voltages are used for determining degradation of a battery. Instead, Ijntema discloses that if there are discrepancies between a measured value and the nominal value in memory, the nominal value is updated so that, in the future, the calculated charge status more closely matches the actual charge status (col. 6, line 51-57).

Ijntema fails to disclose the control circuit of feature (1) quoted above because Ijntema does not disclose that control means 8 controls the output voltage of a converter to be lower than a steady state voltage, so as to cause the storage battery to discharge at a more limited current than the rated current of the storage battery. As can be seen from Fig. 1, the control means 8 does not output any signals to the power supply 1. Instead, control means 8 controls the adjusting means 10 and 11, the clock 13, and time measuring means 12 (Fig. 1; col. 2, lines 25-26).

Ijntema fails to disclose the judgment circuit of feature (2) quoted above because Ijntema only discloses that the charge status of the battery 4 is detected, either by the elapsed discharge time or the elapsed charging time. While the voltage detector 7 can detect when the battery floor has a voltage equal to 10% of the nominal battery capacity, Ijntema nowhere discloses that any determination is made as to whether the battery has degraded.

Pacholok discloses a Ni-Cad battery charging circuit in which a timer 18 controls the time of switching from a fast charge to a slow charge (Fig. 2). Faria is cited as disclosing pulse width modulation (PWM). Thus, Pacholok and Faria fail to cure the deficiencies of Young.

Accordingly, independent claim 2 and its dependent claims 12-20 are patentable. For the foregoing reasons, Applicant requests withdrawal of the rejections.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Petition for Extension of Time

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